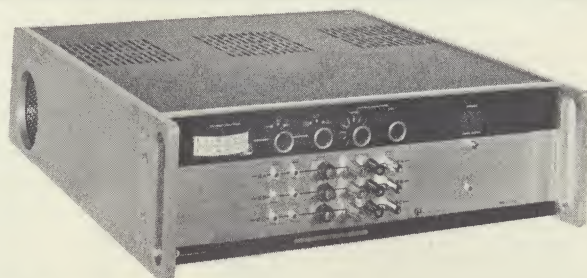


## OPTIMATION TESTS 2 OR 3 PHASE COMPONENTS



Here's a precision polyphase power source from OPTIMATION, INC. — the AC 153 model which can test 2- or 3-phase components used in missiles and aircraft.

With a stable amplitude of less than 0.01% variation and a stable frequency of 0.001% variation, optional, the AC 153 (and other Optimation models) have a wide frequency range from 10 Hz to 100,000 Hz.

They also feature a pure waveform of less than 0.05% distortion.

Adjustable load regulation is a feature—internal resistance can be set to zero.

Why wait? If you have an application, call any SBM office listed below—

you'll have full information and engineering counsel immediately — if not sooner!

Or check Number 13 on  
the enclosed ECHO CARD

### BULLETIN OFFERS:

We've got some interesting bulletins in our offices . . . why not ask for:

- Laboratory Experiments with Coherent Light.
- The New Pulse — a glossary of proposed standard pulse definitions.
- The new complete catalog on Sorensen Power Supplies and Regulators.
- The Optimation Brochure on Precision AC Instruments for Calibration and Testing.



*Associates, Inc.*

ELECTRONIC MANUFACTURERS REPRESENTATIVES

#### ROCHESTER

1700 University Avenue  
Rochester, N.Y. 14610  
(716)271-7430  
TWX 716-235-6898

#### SYRACUSE

138 Pickard Building  
5858 East Molloy Road  
Syracuse, N.Y. 13211  
(315)454-9377

#### WESTCHESTER

655 Commerce Street  
Thornwood, N.Y. 10594  
(914)769-1811  
TWX 914-769-7630

#### LONG ISLAND

528 Old Country Road  
Plainview, L.I., N.Y. 11803  
(516)433-1421

#### MANHATTAN & NORTHERN NEW JERSEY

1519 Stuyvesant Avenue  
Union, New Jersey 07083  
(201)687-8737



# SIDEBANDS

SUMMER 1966

EOA

## WE WELCOME NOW AVAILABLE THROUGH SBM

SBM Associates is most proud to announce that all SBM offices are now representing EOA—which is the abbreviated form of ELECTRO OPTICS ASSOCIATES.

EOA is headquartered in Palo Alto, California, and makes a complete line of highly dependable coolable photo-multiplier assemblies, HE-NE gas lasers and power supplies, spectral irradiance standards and scanning interferometers and accessories.

Just a call to any of our five offices will bring your SBM engineer a-running to show you how proud we are of this new line.

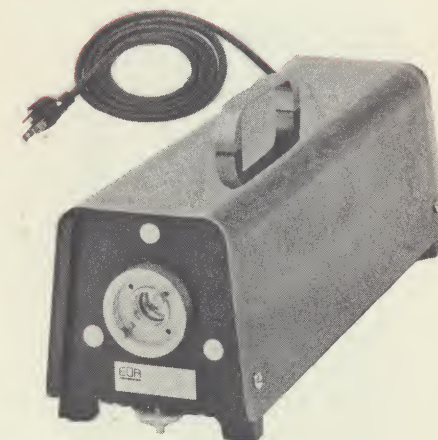
Pictured here, as an example, is the LAS-201 Laboratory Gas Laser which carries the remarkable price tag of under \$1,000.

What's more, it has a ½ milliwatt CW output at 6328 Å wavelength in single-transverse mode, from one end.

It has a 2 milliwatt CW output, 6328 Å, multimode, with an optional spherical mirror.

The LAS-201 has a double-walled, single-isotope filled plasma tube for long life and stability.

For single-transverse mode operation, the basic model is supplied with one flat and one spherical mirror which feature "hard" multiple-layer dielectric coatings and high-efficiency AR coating for absolute freedom from ghosts.



Mirrors for 1.15 or 3.39 micron IR operation are also available and can be quickly interchanged within seconds through the exclusive EOA quick-interchange mounts.

The LAS-201 has an integral power supply which operates from 117 volts 60 cycle line. Noise and ripple of the output amount to only a few percent of the useful output power.

There's lots more to tell you about this great EOA line; we at SBM would be glad to tell you about it. Call us—today!

Or check Number 1 on  
enclosed ECHO CARD for facts



### Fairchild Amplifier A00-10 Is Priced Well Under \$200; Features Low Drift

If you're in the market for 25 or more of these FAIRCHILD A00-10 amplifiers, you'll be amazed at the low price of only \$136! With a single unit price of only \$170, this amplifier combines superb low drift characteristics with a new concept in modular package design.

Long term drift of less than one microvolt per 100 hours and thermal drift

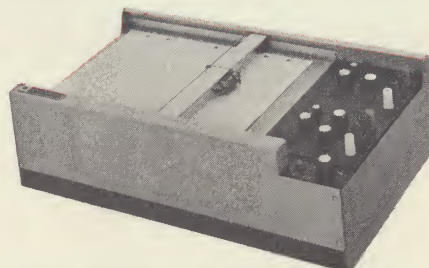


of less than 0.5 microvolts per degree C, are achieved by the use of a photo-resistor chopper requiring no external drive power.

The output has short-circuit protection: Extremely low noise is experienced, too, with equivalent input noise of 5 microvolts peak-to-peak (max) 0.1 to 1.0 cps and 10 microvolts RMS (max), 10 cps to 1 kc.

**Want more information?  
Check Number 2, ECHO CARD!**

### VARIAN X-Y Recorder F-60 Has 100 Microvolt/inch Sensitivity; Very Accurate



This new VARIAN X-Y Recorder, called the F-60, is really compact and delivers stable performance.

The extremely sensitive response is fast and accurate . . . signal changes as small as 1 microvolt can be detected and a 1 millivolt change will move the pen a full 10 inches in as little as 1/2 second. Dynamic accuracy is 0.3% at speeds up to 10"/sec.

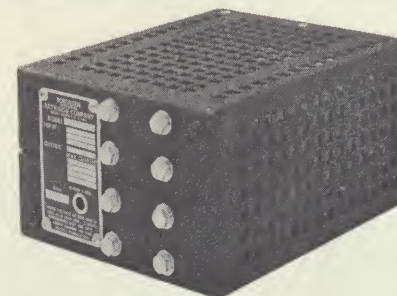
With its 100-microvolt/inch sensitivity and 20-inch/second slewing speed, the F-60 also features a constant 1-megohm input impedance and a 0.1% static accuracy.

The F-6010, as an example, has an input which includes 18 voltage ranges. The 4-terminal guarded input provides excellent rejection.

Broad flexibility is provided through these calibrated voltage ranges, adjustable range vernier control, front-panel zero control with 100% adjustment plus 1 scale width of suppression and adjustable electrical damping.

The F-60 weighs only 26 pounds complete with input modules. Varian's time-proven vacuum hold-down allows charts to be positioned or changed with one hand and we've discovered that this is a welcome feature wherever these machines are.

**Check Number 3 on ECHO CARD  
for full facts on VARIAN**



### SORENSEN QSA SERIES ARE ALL SILICON MODULAR SUPPLIES

Here's a great supply — all silicon modular type ideal for OEM, lab or system applications. It's the SORESENSEN QSA series which any SBM representative will be glad to show you. With a voltage regulation to  $\pm 0.005\%$ , line and load combined, and 47 to 480 Hz input line frequency, the QSA series was specifically designed for flexibility and high performance with excellent regulation and response time at operating temperatures up to 71°C.

RFI specifications meet MIL-I-6181D and MIL-I-26600 standards.

Series and parallel operation capability further enhances the versatility of

these supplies, permitting a wide choice of output voltage and current combinations.

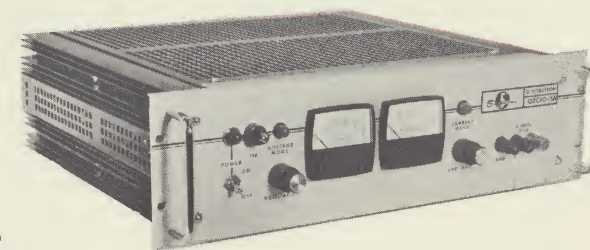
The QSA units feature a low ripple . . . 300  $\mu$  volts RMS—and a 20 microsecond response time. Remote sensing and programming are also featured and up to 20 units may be operated in parallel.

No external heat sink is required and the units are protected from overloads and short circuits.

We think the QSA is ideal for many applications—why not call SBM?

**Or check Number 4 on  
the enclosed ECHO CARD**

### SORENSEN QRCA SERIES ARE WIDE RANGE WITH CONTINUOUSLY VARIABLE OUTPUT



From SORESENSEN again comes this updated QRCA series of ranger power supplies — wide range units with continuously variable output. Providing constant voltage ( $\pm 0.005\%$ ) and constant current ( $\pm 0.05\%$ ) regulation, the QRCA has a fast 50 microsecond response.

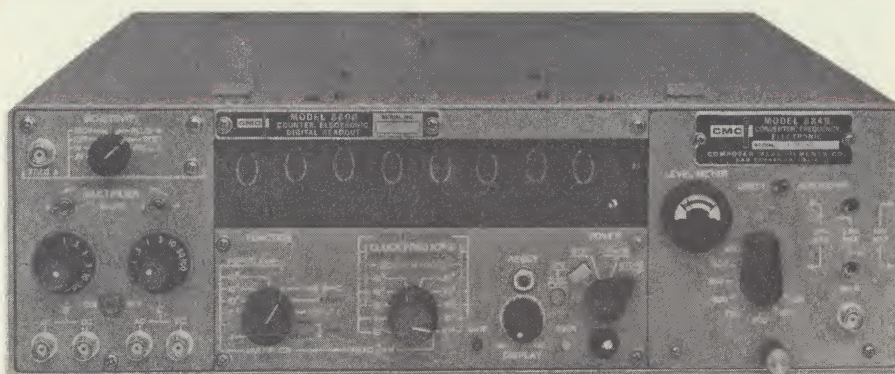
And they're budget priced starting at \$315! We invite comparisons —

especially when you realize that the QRCA have low (1 mv) ripple in the voltage mode and low (1 ma) ripple in the current mode. They also have fully automatic crossover from constant voltage to constant current operation, or vice versa at any operating point . . . with complete control during transition.

**You won't go wrong: check  
Number 5 for Sorensen facts**



## CMC Universal Counter Borrows from Militarized Counter



Here's the all-new CMC Model 880B—which is really a modified, commercial version of the CMC 880A fully militarized universal counter . . . with the "Eagle squeezed out of it!"

CMC cut the high-priced Mil approved parts and replaced them with physically interchangeable high quality components. Some of the extra accessories, such as a front cover and special connectors and adapters, were removed from the military version.

Result: a thoroughly reliable counter far superior to anything else on the market—and we include high-powered, high priced counters in our comparison!

Just look at these *plus* features of the CMC 880B:

100 Mc direct count (competitive counterparts go to only 50 Mc).

Built-in Time Interval Measurement (no separate plug-in needed; no extra cost!)

Complete range from DC to 3000 Mc with just one plug-in (not two).

Budget price—ask us about comparisons.

Most of the features of the militarized 880A exist in this commercial B model. Actually, the B version has been designed in accordance with environ-

mental spec MIL-E-16400, shock spec MIL-I-901 and interference spec MIL-I-16910, revision A (radiated) and revision C (conducted) thus assuring accuracy and reliability under wide extremes of use. However, certified test data and government inspection are not included.

The counter can resolve and display time intervals to the nearest 0.1 microsecond and can accumulate time counts as large as  $10^9$  seconds. In ratio measurements, resolutions up to 10 nanoseconds can be achieved.

The precise time base frequencies (0.1 Hz to 10 MHz) generated within the 880B are brought to external connectors to provide a convenient source of laboratory standard frequency signals.

All controls, including memory override, input slope and polarity selectors are located on the front panel.

The 1 megohm input impedance remains constant for all attenuator settings thus preventing changes in input loading with attenuator adjustment. The 660 B is designed to withstand inputs as high as 600 volts peak without damage.

**We can't tell all here;  
check Number 6, ECHO CARD**

## E-H Introduces "State-of-the-Art" Instruments

The accelerating growth of the solid-state market is placing increasing emphasis on the need for integral instrument packages. Increasing device sophistication and high speed performance, together with the attempt to reduce production test costs to a minimum in a highly competitive industry, have very clearly presented a challenge to manufacturers of test instrumentation.

E-H has responded to this need with an entirely new line of "state-of-the-art" instruments specifically designed for digital systems applications in the production testing of switching devices, logic modules and memory elements.

This new significant addition to the E-H programmable pulse generator line now exists with the addition of the Model 1139 Output Unit and the Model 1420 Timing Unit. These units, when used together, represent the state-of-the-art in digitally programmable generators. These units have provisions for digital programming of the following parameters: Fine and coarse rep-rate, fine and coarse delay and width, fine and coarse amplitude, fine and coarse ramp-rate, offset, polarity.

They also have provisions for external triggering and gating.

These instruments are beyond a doubt, the finest in programmable generators available to you. As in all E-H generators, the specifications apply under worst-case conditions. That means that accuracy and linearity of programming are retained as *all* parameters are varied simultaneously. In the field of *programmable* generators this is most important, for there is no operator to correct for interaction of programmed functions. (If you compare other units, check closely for interaction of programming functions.)

Models 1420/1139 feature a programmable rep-rate (1KHz to 10MHz) and extended ranges of delay and width (10 ns to 100 us).

They are designed to operate in combination with the 1121 pulse driver to extend its usefulness.

Six Model 930 BCD boards (installed) are needed for digital programming. The 930 board can also be used with some of the other pulsers.

**Get full E-H Specs; just check  
Number 7; ECHO CARD**

### Model 1420

#### Timing Unit

Rep-rate—programmable 1 KHz to 10MHz

4 Decade ranges—1 line each

3 digit BCD fine control—12 lines

Accuracy— $\pm 5\%$

Delay and Width—Programmable

10 ns to 100 us

4 Decade ranges—1 line each

3 digit BCD fine control—12 lines

Accuracy— $\pm 5\%$ ,  $\pm 3$  ns

#### Outputs

1. 5–6 volts into 50 $\Omega$ —internal adjustment

2. 2 volts into 50 $\Omega$ —fixed

Trigger Output—5 v into 50 $\Omega$

Ext. Drive—to 5 MHz, 2 volts

Gate—Neg. 2 volts to block pulse train

### SPECIFICATIONS

### Model 1139

#### Output Unit

Amplitude—programmable

On x 1 attenuation

$\pm 9.99$  volts to  $\pm 3.00$  volts

3 digit BCD fine control—12 lines

Accuracy— $\pm 5\%$

Attenuator—programmable

x1, x2, x4, x5, x8, x20, x40

Base Line Offset—Programmable

Polarity—1 line each

Offset before attenuator

$\pm 9.99$  volts into 50 $\Omega$ —(current source)

3 digit BCD fine control—12 lines

Accuracy— $\pm 5\%$ ,  $\pm 15$  mv.

Rise Time—Programmable—

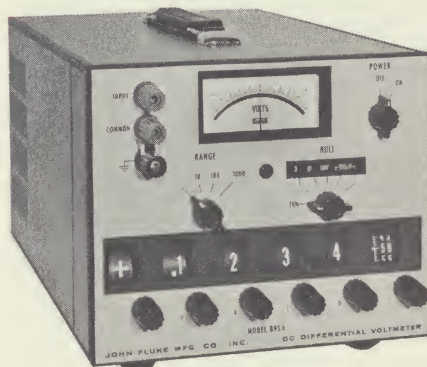
Linear Ramp

At 9.99 volts output

5 ns to 13.3  $\mu$ sec



## FLUKE Voltmeter Offers Infinite Resistance Input At Null; 0 — $\pm 1100$ Volts



Yes, sir, that's what we said . . . this FLUKE 895A solid state differential voltmeter offers infinite resistance input at null from 0 to  $\pm 1100$  volts!

What's more, it features absolute accuracy to  $\pm 0.0025\%$  of the dial setting!

That's performance that we can all be proud of — and it's made possible through the incorporation of a unique Fluke solid-state photo-chopper-stabilized 1100 VDC reference supply which is calibrated against a zener EMF with state-of-the-art stability and temperature coefficient parameters.

Other features of the 895A: it incorporates ratiometer capability; it has 100  $\mu$ v full scale null sensitivity; its resolution is 0.1 ppm of range and it has a grounded recorder output.

The 895A is also designed for those applications where it is desired to obtain an extremely accurate ratio of one voltage to another. It can also be operated as a conventional voltmeter to rapidly determine the input to  $\pm 3\%$  of range.

*Get with it! Check 8 on ECHO CARD for more facts*

## OOPS! WE GOOFED!

We call it the Case of the Wandering Decimal!

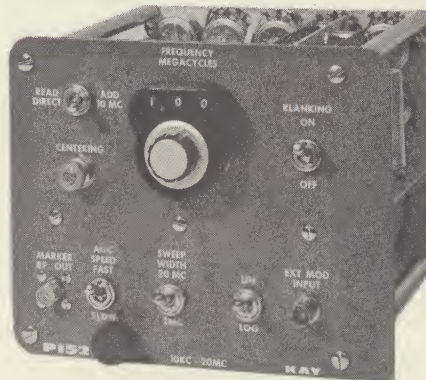
In the last SIDEBANDS, we talked about the FLUKE 931A true RMS differential voltmeter. Right on Page 7 we said that its extreme accuracy was 0.5% of reading.

*That should have been .05% of reading!*

At least, it proved some of our readers were awake when they called the wandering decimal to our attention. If you want more information, check Number 9 on this issue's ECHO CARD.

## KAY Plug-in Covers Spectrum from 10 kc to 20 mc in Single Sweep

Not only does this KAY P-152A video frequency sweep generator plug-in cover the spectrum from 10 kc to 20 mc in a single sweep, but it also provides continuously variable sweep width on



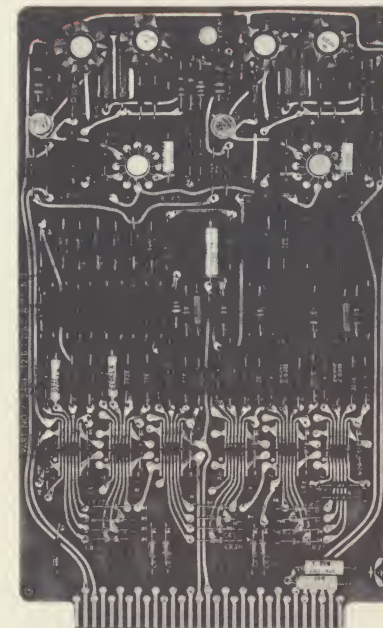
two bands—10 kc to 20 mc or 10 kc to 2.0 mc. Any portion of the range can be swept in a centered sweep.

It provides a full 1.0 volt rms into load of frequency linear, agc'd flat, swept RF signal.

Any sweep width can be either linear or logarithmic at all rep rates.

*OK? Get KAY facts . . . check 10, ECHO CARD*

## ASTRODATA Converter Has Flatpack Integrated Circuitry



This new ASTRODATA Series 3500 Digital-to-Analog Converter, using flat-pack MOS integrated circuitry, can convert up to 15-digit data to either  $\pm 10$  or  $\pm 100$  volt full-scale output levels.

The circuit density achieved using these new flatpacks allows up to four DAC channels, each containing an individual summing amplifier, to be assembled on a single-etched wiring circuit card.

Each DAC digit includes a buffer storage register in addition to the control register.

The converter has a self-contained power supply. All solid-state circuitry is used throughout Series 3500.

*Want to know more?  
Check Number 11, ECHO CARD*

## FLUKE Power Supplies May Fit Your Special Applications



Shown above is FLUKE's Model 413C Power Supply which develops an extremely high voltage from a switched-primary high voltage transformer and a silicon diode rectifier network arranged as a voltage doubler.

Many applications in our SBM area will be found for calibration of DC measuring instruments, system calibration, component evaluation and test and for power traveling wave tubes, backward wave oscillators, klystrons, photomultiplier tubes and ionization chambers.

Features of the 413C include an output range from 0–3111 VDC, 0–20 ma. With 0.005% stability and a ripple less than 150  $\mu$ v RMS, this unit should be in your applications.

Eighty db of DC feedback help bring about a calibration accuracy of better than  $\pm 0.25\%$  over long periods of time. Line regulation is  $\pm 0.001\%$  and load regulation is also  $\pm 0.001\%$ .

*This FLUKE can be yours;  
check 12 on ECHO CARD*



# S.B.M. ECHO CARD

Just check below any of the literature items offered in this issue of Sidebands and they will be forwarded immediately.

ITEM #1..... ITEM #6..... ITEM #11.....

ITEM #2..... ITEM #7..... ITEM #12.....

ITEM #3..... ITEM #8..... ITEM #13.....

ITEM #4..... ITEM #9..... ITEM #14.....

ITEM #5..... ITEM #10..... ITEM #15.....

Have Applications Engineer call.....

OTHER.....

NAME..... TITLE.....

FIRM.....

STREET.....

CITY..... STATE..... ZIP NO.....

No  
Postage Stamp  
Necessary  
If Mailed in the  
United States

**BUSINESS REPLY CARD**

First Class Permit No. 3310 • Syracuse, N.Y.



ELECTRONIC MANUFACTURERS REPRESENTATIVES

138 PICKARD BLDG., 5858 MOLLOY ROAD, SYRACUSE, NEW YORK 13211